

Massachusetts DEP Electronic Equipment and Household Chemicals Disposal Research

July 1999

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I. Objectives and Methodology

A) Objectives of the Study

- Understand the current methods consumers use to dispose of cathode ray tubes (CRT's) by discarding unwanted or broken TV's and personal computers.
- Highlight the existence of opportunities for communicating disposal alternatives to the public.
- Determine influences upon disposal practices, including demographic characteristics such as age and education.
- Assess consumer awareness and understanding of High Definition Television (HDTV or DTV) to measure general expectations for future TV disposal.
- Understand current methods of discarding household appliances and electronic equipment in general, including items such as refrigerators or stereo equipment.

B) Survey design and methodology

Method: Computer-Assisted Telephone Interviewing
Interviewing dates: June 14-17, 1999
Sample size: Representative sample of 450 Massachusetts residents
Margin of error: ± 4.6 percentage points at the midpoint of the 95% confidence level

II. Executive Summary

One-third (32%) of all respondents have had a TV in their household that stopped working within the past five years. Nearly four in ten (37%) of these residents report that they *threw the TV away* (approximately 275,000 TV's), while one-fifth (20%) say they *put the TV in storage* (approximately 148,000 TV's). Older respondents (56 years of age and over), as well as those with a high school education or less, appear slightly more likely to *throw their TV away* than younger respondents and those with higher levels of education. In addition, virtually all of those who *placed a TV in storage* owned their own home. However, sample sizes among subgroups of the population are often small (less than 30 respondents) throughout this report, and it is necessary to use caution when interpreting these results.

A majority (60%) of Massachusetts residents report having a personal computer in their home. Four in ten (40%) of those who have a computer say that they have had a computer in their home that stopped working (approximately 548,000 computers). Most of those who stopped using a computer for any reason other than because it was broken either *gave the computer to someone else* (39%) or *put it in storage* (33%; approximately 160,000 computers). Very few respondents report *throwing the computer away*.

The vast majority (79%) of respondents report a willingness to pay a small fee to *deposit a TV or computer at a designated disposal site*.

Three in ten (31%) respondents report a general awareness of *charities that accept TV's and electronic equipment*, with college graduates and those 36-to-55 years of age expressing the greatest levels of awareness. Still, one in seven (14%) of those who express awareness of such charities *cannot cite any by name*. Those who donated electronic equipment to charity most frequently say they donated a *computer* (15%) or *TV* (13%). Upper-income respondents (\$50,000 or more) are nearly twice as likely to report donating an item as those who earn less income.

Half (53%) of respondents have had an appliance or piece of electronic equipment professionally repaired, with residents most often stating that they had a *washer/dryer* (25%) repaired, followed by a *TV* (13%). In contrast, only 15% sold an item through a yardsale or classified advertisement.

Three out of five (60%) of respondents are aware of HDTV, with men, college graduates, and upper-income respondents possessing the highest levels of awareness. One-fourth (25%) of respondents say HDTV will provide a *better quality picture*. However, one-fifth (19%) of those who are generally aware of HDTV *do not recall anything specific about it*.

Half (46%) of respondents have disposed of household chemicals. Those 36 years of age and older are more likely than younger respondents to report disposing of chemicals (53% vs. 32%), and they are twice as likely to express awareness of the proper method for disposing of such chemicals (61% vs. 29%). Those 36 years of age and older are thus more likely than younger respondents to report disposing of the chemicals at a *disposal site* (71% vs. 28%). Conversely, younger respondents (under 36 years of age) are more likely to report disposing of them *with the household trash* (39% vs. 13%).

III. Consumer Disposal of CRT Units

Understanding current CRT disposal practices among Massachusetts residents provides an indication of the magnitude of CRT disposal in the state, as well as the types of disposal methods residents most frequently employ. In addition, such an understanding can help suggest possible areas for effectively communicating CRT disposal alternatives to consumers, including disposing of TV's and computers at designated CRT disposal sites. Consequently, this survey asked respondents how many TV's and computer monitors they possess, as well as how they dispose of TV's and computers in their possession that are either obsolete or that no longer work. The research paid particular attention to why residents *throw these items away*, rather than either *having them repaired* or *donating them to charity*. In addition, the survey assessed consumer receptiveness to *paying a small fee to properly dispose of TV's and computers* they no longer want.

Disposal of TV's

- Half (55%) of all respondents report having either one (22%) or two (33%) TV's in their household. Meanwhile, one-fourth (23%) have three TV's, and one in ten (11%) report having four TV's in their home. A lesser number possess either five (5%) or more than five (4%) TV's.
 - ⇒ Therefore, based upon these percentages, Massachusetts households contain and estimated 5.8 million TV's (see Table 1).
 - ⇒ The average number of TV's per household is 2.5.

Table 1. Estimated Number of TV's in Massachusetts Households

<i>Number of TV's in Household</i>	<i>% of Respondents</i>	<i>Number of Households</i> (% respondents X 2,322,000)*	<i>Number of TV's</i> (number of TV's in household x number of households)^
One	22	510,840	510,840
Two	33	766,260	1,532,520
Three	23	534,060	1,602,180
Four	11	255,420	1,021,680
Five	5	116,100	580,500
More than five	4	92,880	557,280
Total Number of TV's			5,805,000

*Figure (2,322,000) represents the 1996 U.S. Census estimate of the total number of households in Massachusetts.

^All those reporting more than five TV's in their household were counted as having six TV's.

- One-third (32%) of all respondents report that they have had a TV in their household that stopped working within the past five years (approximately 740,000 computers).
- Among this group, nearly four in ten (37%) disposed of their TV by *throwing it away* (12% of all respondents, or approximately 275,000 TV's).
 - ⇒ Half (55%) of those who disposed of their TV by throwing it away say they did not have it repaired because *repairs cost too much*. In addition, one-third (32%) of those who threw their TV away maintain that it *could not be repaired*. Other reasons residents who disposed of their TV by throwing it away cite for not having it repaired include the TV was *not worth having repaired* and having it repaired was simply *too much trouble*.
 - ⇒ Respondents 56 years of age and older are more likely to say they *threw the TV away* than are younger respondents (45% vs. 33%). Similarly, those possessing a high school education or less are more likely to report *throwing their TV away* than are those with more than a high school education (46% vs. 34%). However, since sample sizes among those who threw their TV away are small, it is necessary to use caution when interpreting these results.
- One-fifth (21%) of those who had a TV in their home that stopped working had it *professionally repaired*, and a nearly identical number (20%) *put the TV in storage* (6% of all respondents, or approximately 148,000 TV's). A lesser number (9%) *gave the TV to someone else*.

Figure 1. Possession of TV's that Stopped Working

In the past 5 years, has a TV of yours
ever stopped working?

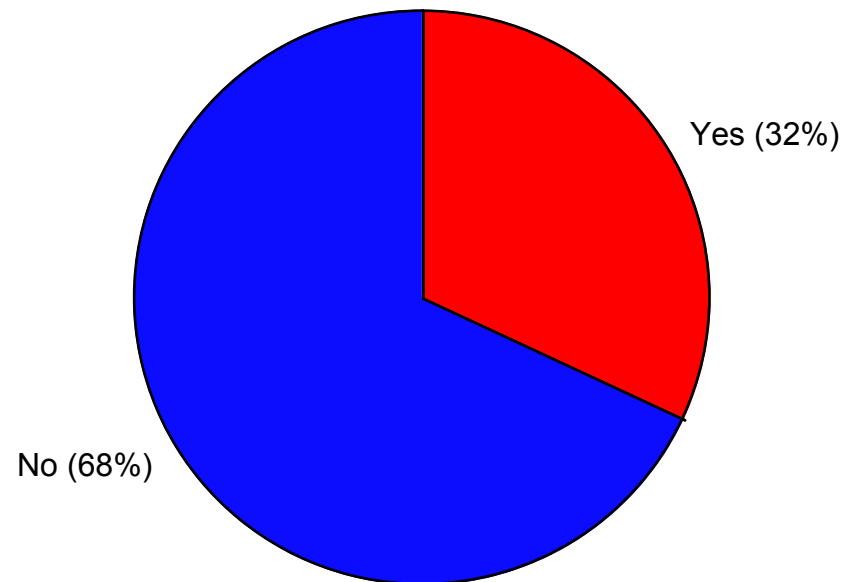
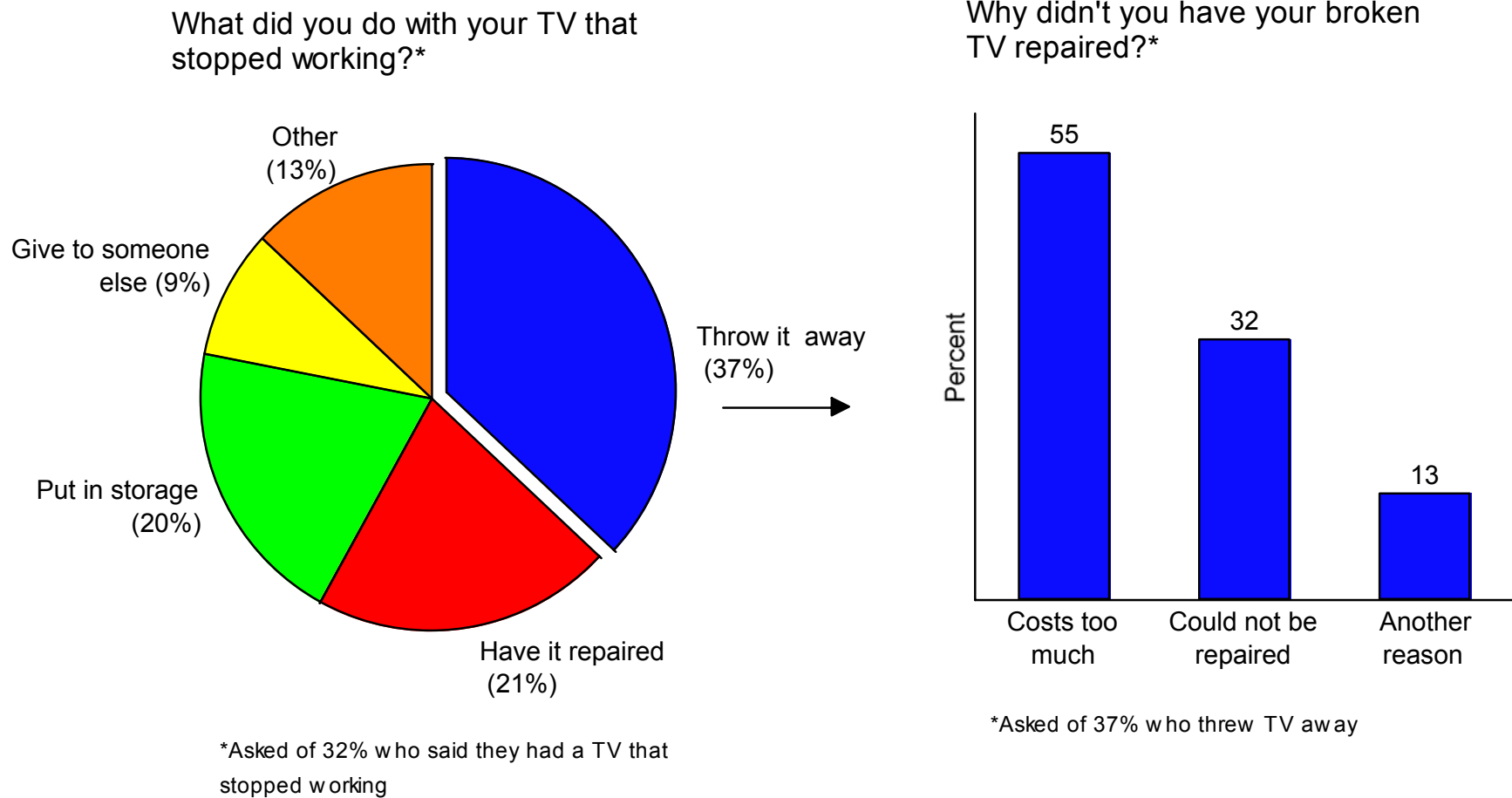


Figure 2. Disposal of TV's that Stopped Working



Disposal of Computers

- Three out of five (59%) respondents report that they have a personal computer in their home (approximately 1.4 million Massachusetts households).
 - ⇒ As expected, upper-income respondents (83%) and college graduates (76%) are more likely to have a personal computer in their home than are lower-income respondents and those who possess less than a college education.
- Two-thirds (67%) of those who have a computer in their home possess just one computer. A far lesser number of respondents report having two (18%), three (10%), or more than three (4%) computers in their home.
 - ⇒ Consequently, based upon these findings, Massachusetts households possess an estimated total of approximately 2 million computers (see Table 2).

Table 2. Estimated Number of Computers in Massachusetts Households

<i>Number of Computers in Household</i>	<i>% of Respondents*</i>	<i>Number of Households</i> (% respondents X 1,369,980)**	<i>Number of Computers</i> (number of computers in household x number of households)^
One	67	917,886	917,886
Two	18	246,596	493,192
Three	10	136,998	410,994
More than three	4	54,799	219,196
Total Number of Computers			2,041,268

*Figures represent percentages of the 59% of all respondents who say they have a computer in their home.

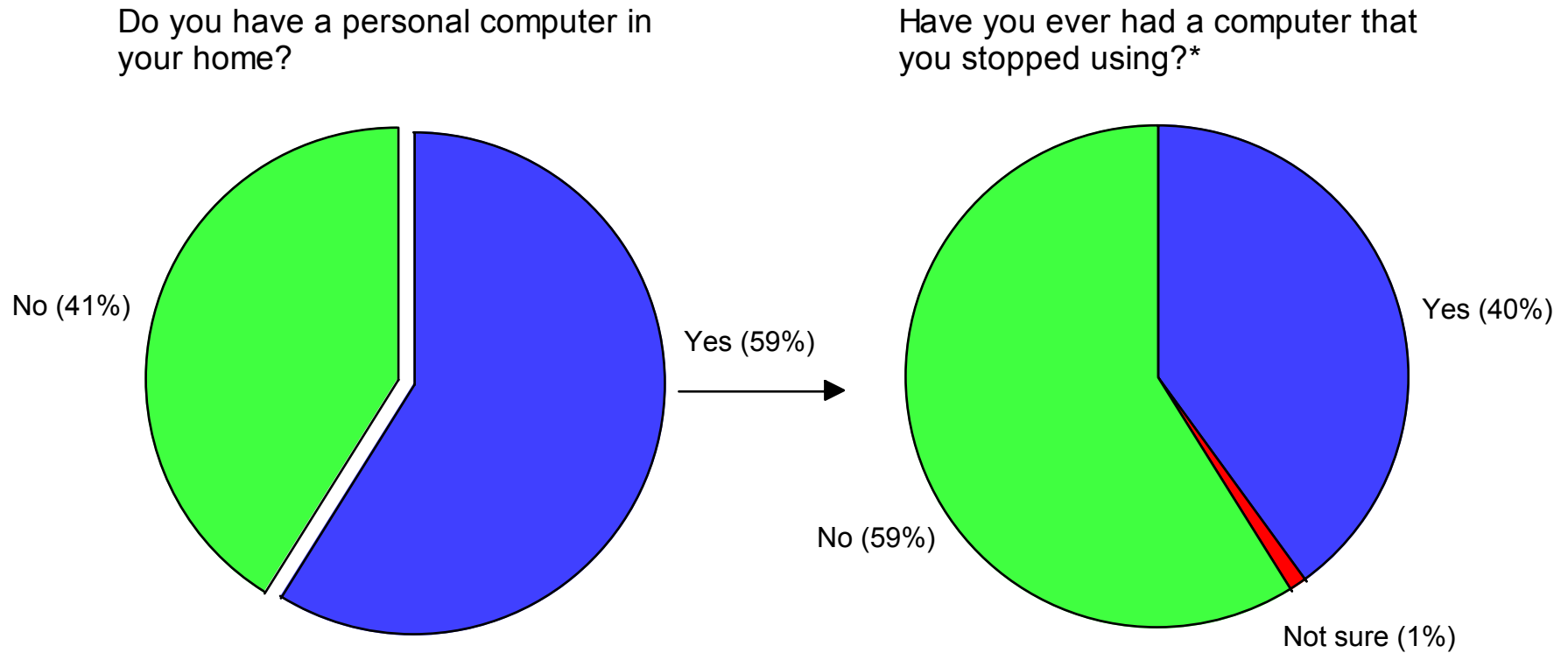
**The figure (1,369,980) represents the total number of households that report having a computer, calculated as 59% of 1996 U.S. Census estimate of the total number of households in Massachusetts (2,322,000).

^All those reporting more than three computers in their household were counted as having four computers.

- Two in five (40%) of those who own a computer report that they have had a computer in their home that they stopped using (approximately 548,000 computers).
 - ⇒ Upper-income respondents (50%), as well as those with a graduate or professional education (70%), are more likely have a computer in their home that they stopped using than are those who report lower income and education levels.
- Half (47%) of those who stopped using a computer say they did so because they *upgraded to a new computer*. Fewer report that they stopped using a computer because it was *too old* (22%), or *too slow* (13%). Only one in ten stopped using a computer because *it was broken* (11%).*
 - ⇒ Respondents who stopped using a computer for any reason other than because it was broken (e. g. upgraded, too old) most often say they either *gave the computer to someone else* (39%) or *put it in storage* (33%; approximately 160,000 computers). A lesser number either *donated the computer to charity* (12%) or *sold it* (7%).
- Regardless of whether the computer they stopped using was broken or not, less than one percent say they threw their computer away (a total of four respondents).

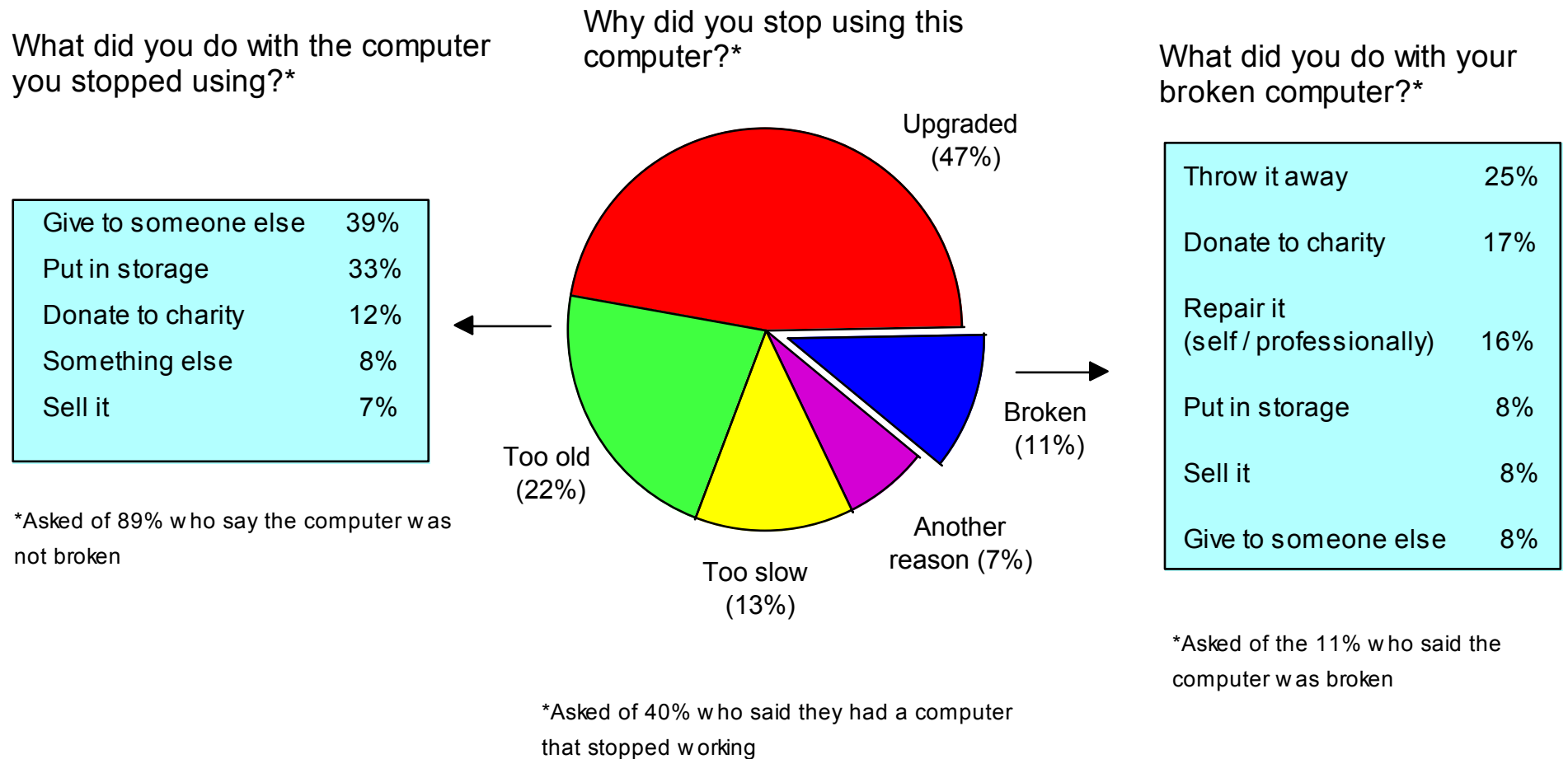
* The number of respondents who stopped using a computer because it was either too slow or broken is small (less than 15 respondents). Thus, it is necessary to use caution when interpreting results based upon this group of respondents.

Figure 3. Ownership of Computers and Percent with Computers that Stopped Working



*Asked of 59% who said yes

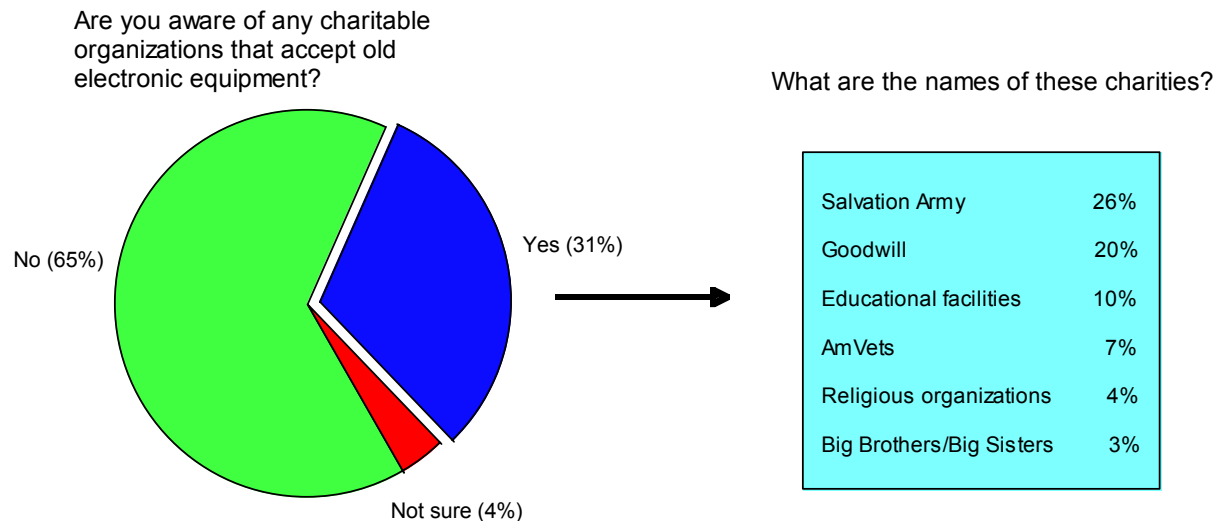
Figure 4. Why Respondents Stopped Using Computers



Awareness of Charities that Accept Electronic Equipment

- Three in ten (31%) of all respondents report a general awareness of charities that accept TV's and computers. The charities respondents most frequently mention are the *Salvation Army* (26%), *Goodwill* (20%), and *educational facilities* (10%). However, one out of seven (14%) of those who say they are aware of such charities *could not name any*.
- ⇒ College graduates are slightly more likely to express awareness of charities that accept electronic equipment than are those with less than a college education (34% vs. 26%). In addition, those 36-to-55 years of age possess a greater awareness of such charities (43%) than do both older (26%) and younger (26%) respondents.

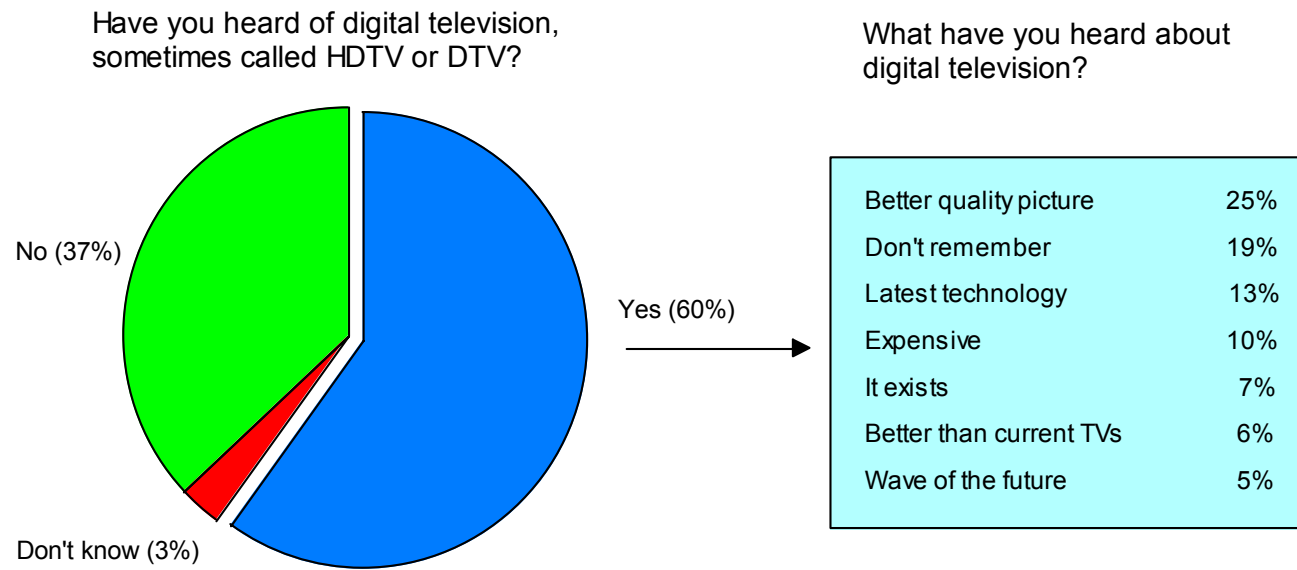
Figure 5. Awareness of Charities that Accept Electronic Equipment



Awareness of HDTV or DTV

- Three out of five (60%) residents have heard of digital television. Respondents most often say that HDTV will provide a *better quality picture* (25%), that they *don't remember* anything specific about HDTV (19%), and that it is the *latest technology* (13%). Men, college graduates, and upper-income respondents report the highest levels of awareness of HDTV.

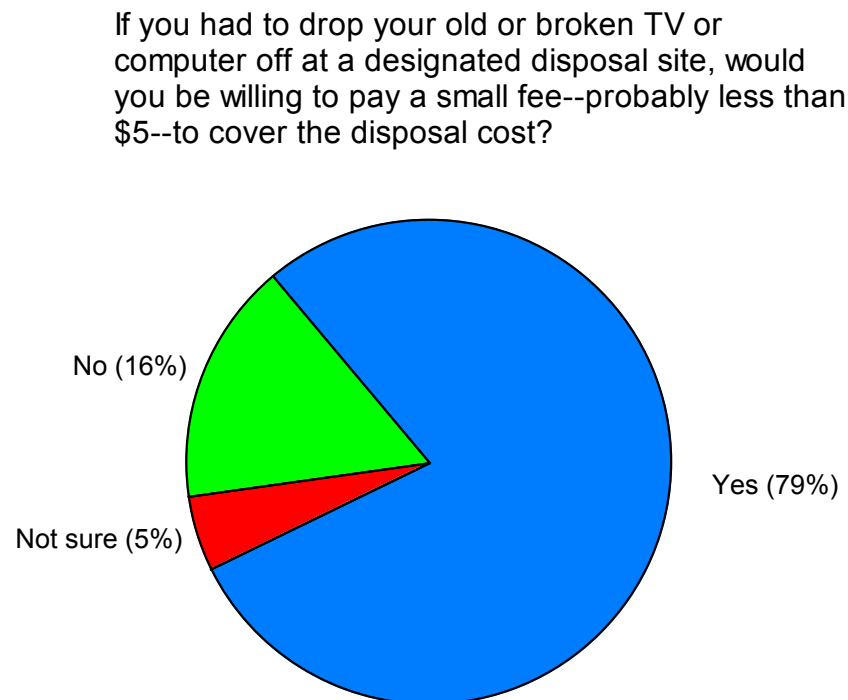
Figure 6. Awareness of HDTV



Willingness to Pay a Small Fee to Deposit TV's and Computers

- The vast majority (79%) of respondents report a willingness to pay a small fee to deposit a TV or computer that they no longer want at a designated disposal site. Consumer receptiveness to the idea of paying a small fee for disposing of CRT's cuts across differing income, education, and age groups. However, residents living in the state's 617 area code are the least receptive to this idea (65% vs. 80% or more in all other area codes in the state).

Figure 7. Willingness to Pay Fee for Disposing of TV's and Computers



IV. Consumer Disposal of General Appliances and Electronic Equipment

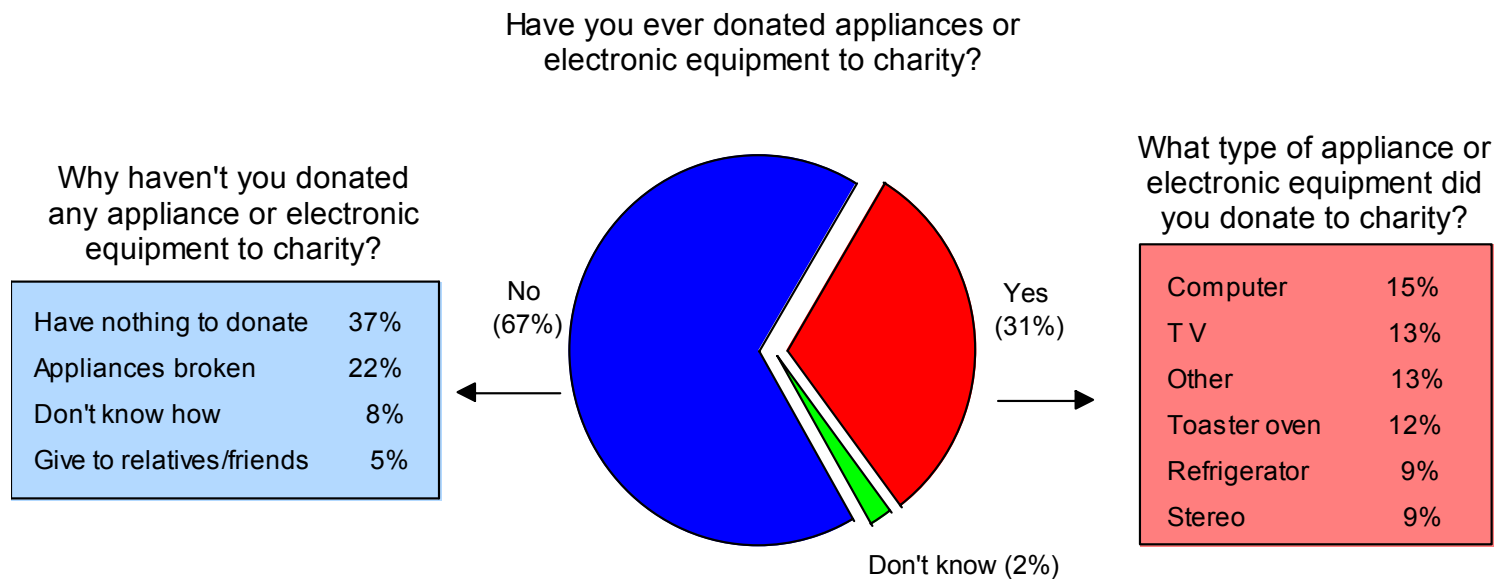
In addition to focusing specifically upon the disposal of TV's and computers, understanding how residents dispose of broken or unwanted household appliances and electronic equipment in general can help provide a clearer picture of broad disposal practices in the state. This research focused upon three ways residents might discard broken or unwanted items: *donating the items to charity, having the items professionally repaired, and selling the items through yardsales or classified advertisements.*

Donations to Charity

- Three in ten (31%) respondents report having donated an appliance or other piece of electronic equipment to charity, while two-thirds (67%) have never made such a donation.
- Among those who have made a donation, residents most frequently report donating to charity include computers (15%), TV's (13%), refrigerators (9%), and stereo equipment (9%). Fewer respondents mention items such as a washer or dryer (6%), or a stove (5%).
 - ⇒ Those who have not donated an appliance to charity most often say they *never had anything to donate* (37%) or the *appliance was broken* (22%).

- Three out of five (63%) respondents most recently donated an item to charity within the last year. One-fourth (23%) donated an item one-to-three years ago, while one in ten (12%) donated an item to charity more than three years ago.
- Two in five (41%) upper-income residents (\$50,000 or more) say they recently donated an item to charity, compared with one-fourth (23%) of those in the middle-income category (\$35,000 to \$49,999) and a similar number (26%) of those earning less than \$35,000 a year.

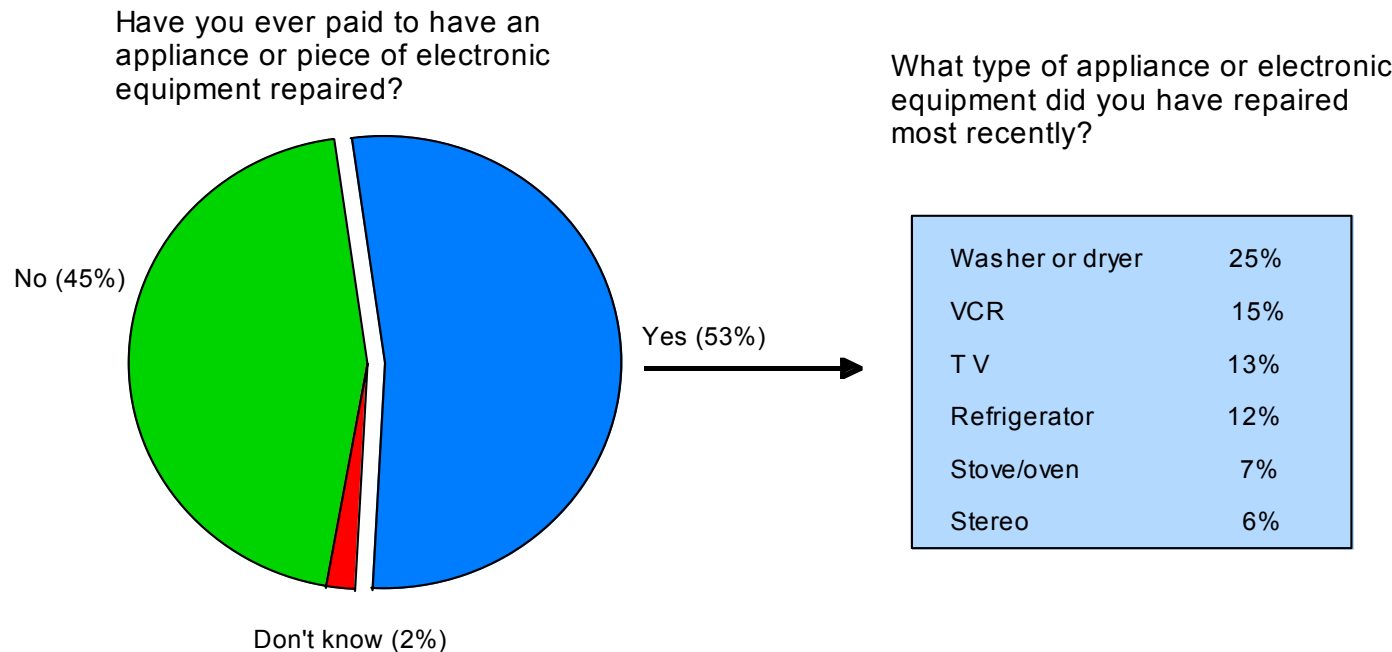
Figure 8. Donations to Charity



Professional Repairs

- Half of all respondents (53%) say they have *paid to have an appliance or piece of electronic equipment repaired*.
 - ⇒ Among this group, one-fourth (25%) recently had either a washer or a dryer repaired, while fewer respondents mention a VCR (15%), TV (13%), or refrigerator (12%).
 - ⇒ Half (48%) of all respondents had the item repaired within the past year. Three in ten (29%) had the item repaired one-to-three years ago, and 20% had the item repaired more than three years ago.

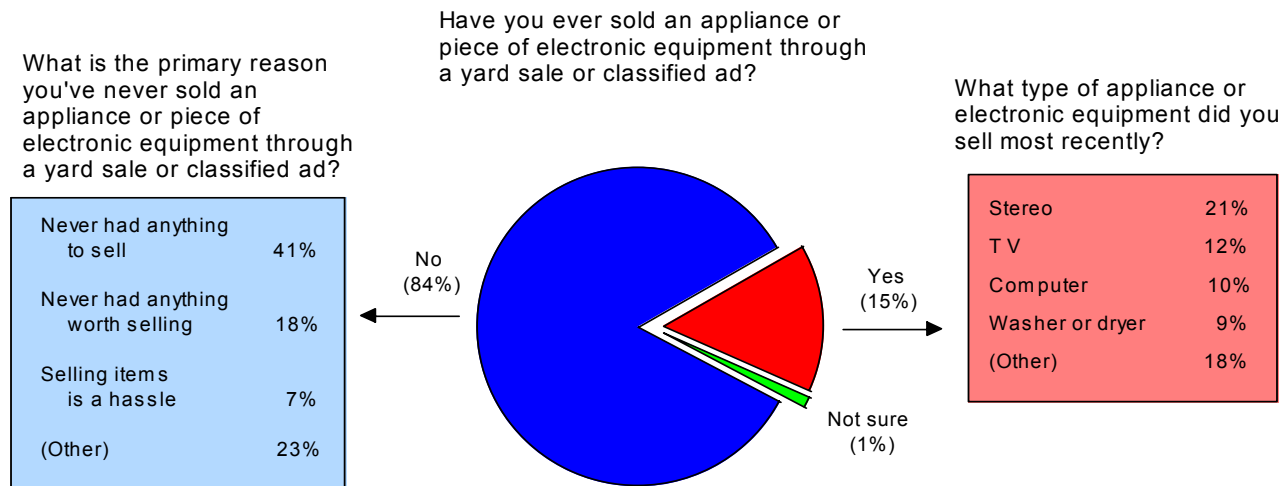
Figure 9. Professional Repairs



Sales through Yardsales or Classified Advertisements

- Only one in seven (15%) respondents state that they recently *sold an appliance or piece of electronic equipment through a yardsale or a classified ad*, with respondents most frequently citing that they sold stereo equipment (21%), followed by a TV (12%) or washer/dryer (9%).
 - ⇒ Four in ten (40%) respondents who have sold an appliance or piece of electronic equipment did so within the past year. Three in ten (29%) report selling the item within the past one-to-three years, and a similar number (28%) sold the piece of equipment more than three years ago.
 - ⇒ The primary reason residents cite for not selling anything through a yardsale or classified ad is that they simply *did not have anything to sell* (41%). In addition, respondents mention that they did not have *anything worth selling* (18%) and that selling items in this fashion is *too much of a hassle* (7%).

Figure 10. Yardsales or Classified Ads



V. Consumer Disposal of Household Chemicals

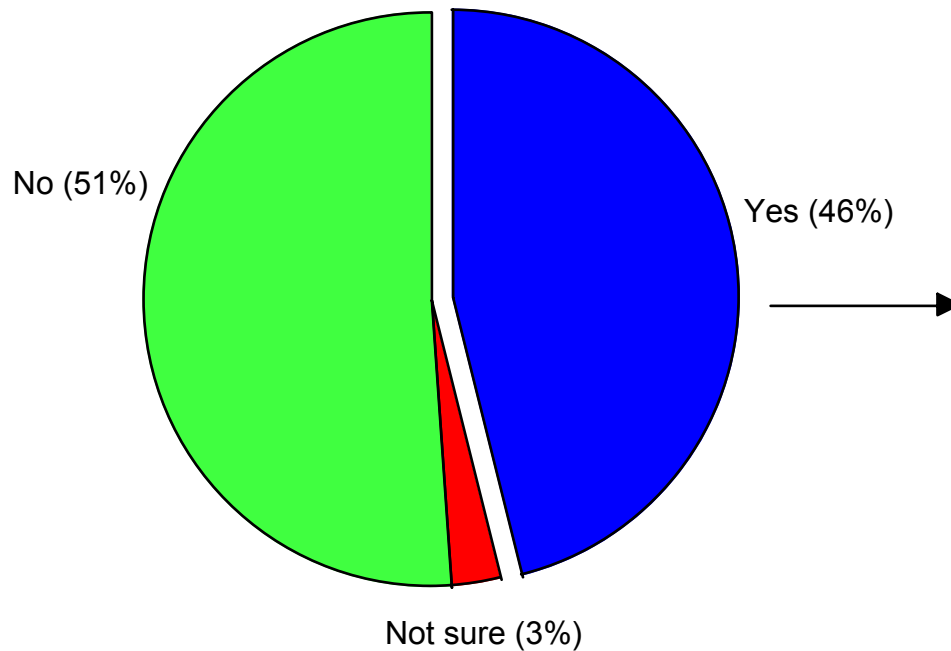
Along with appliances and electronic equipment, this survey asked respondents whether or not they have ever disposed of household chemicals, such as paint or cleaners. The research focused upon *how residents dispose of these materials*, as well as what respondents believe is the *proper method for disposing of this type of household chemicals*.

- Half (46%) of all residents have disposed of partially used household chemicals at some time. Four in ten (38%) of these respondents disposed of chemicals in conjunction with cleaning out a storage area, while somewhat fewer did so during a move (21%) or some other type of household project (18%).
 - ⇒ Residents 36 years of age and older are far more likely than younger respondents to have disposed of household chemicals (53% vs. 32%). In addition, men are more likely than women to report disposing of household chemicals (51% vs. 43%).
- Further, the longer respondents have lived in their current home, the more likely they are to dispose of household chemicals. Half (51%) of those who have lived in their current home for more than four years report disposing of household chemicals at some time.
 - ⇒ Conversely, only one third (35%) of those who have lived in their home two-to-three years, and an identical number (35%) of those who have lived in their home one year or less, say they have disposed of such materials.

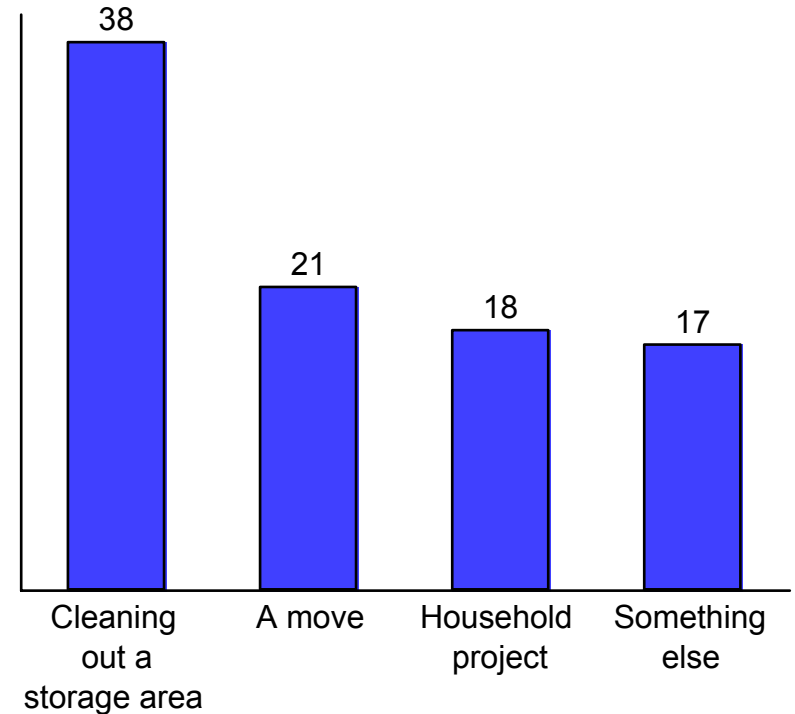
- A strong majority (65%) of those who have disposed of household chemicals say they took them to a *hazardous waste drop-off site*. Nevertheless, two in ten (19%) say they disposed of the chemicals by *throwing them away in the household trash* (8% of all respondents).
 - ⇒ Respondents 36 years of age and older are far more likely than younger residents to report disposing of household chemicals at a *hazardous materials drop-off site* (71% vs. 28%).
 - ⇒ In contrast, younger respondents (35 years of age and younger) are more likely to say they deposited the chemicals in the *household trash* (39% vs. 13%).
- Half (54%) of all respondents are aware that the proper method for disposing of household chemicals is to *take them to a hazardous waste drop-off site*.
 - ⇒ Still, one-third (36%) report that they *don't know* the proper method for disposing of such chemicals, while a much smaller number (5%) believe the proper method is to *throw the chemicals out with the household trash*.
- Older respondents (36 years of age and older) are more likely than younger respondents to express awareness that the proper method for disposing of household chemicals is to *take them to a hazardous materials drop-off site* (61% vs. 29%).
- Further, respondents with a graduate or professional education display the highest level of awareness of the proper method for disposing of household chemicals (72%). Meanwhile, high school graduates (48%) and college graduates who did not attend graduate or professional school (52%) exhibit similar levels of awareness of the proper way to dispose of hazardous household chemicals.

Figure 11. Disposal of Household Chemicals

Have you ever disposed of partially used household chemicals?



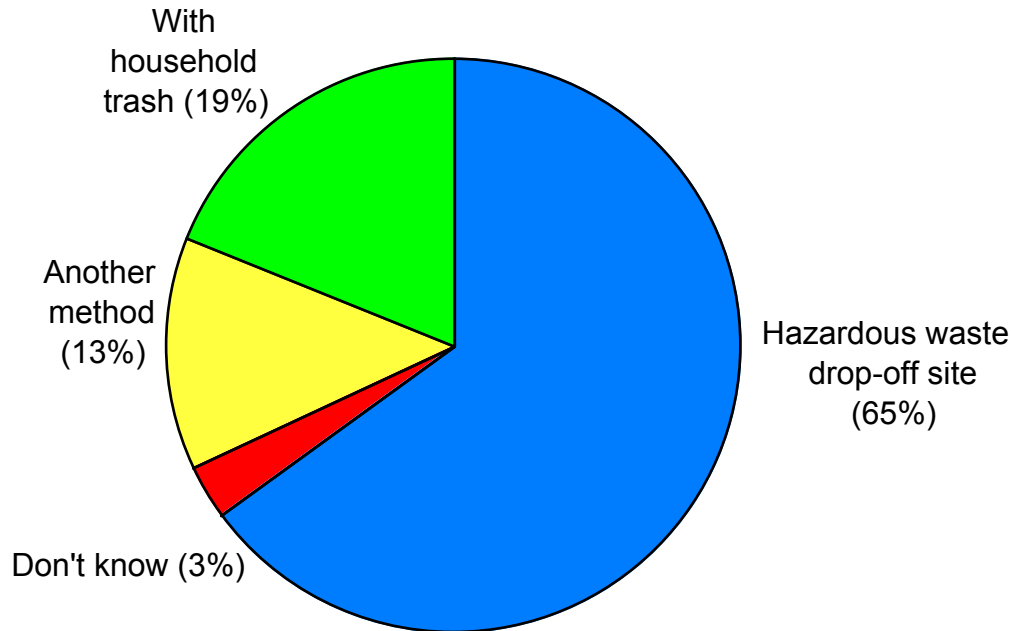
The last time you disposed of household chemicals, was it in conjunction with a household project, cleaning out a storage area, or in a move?*



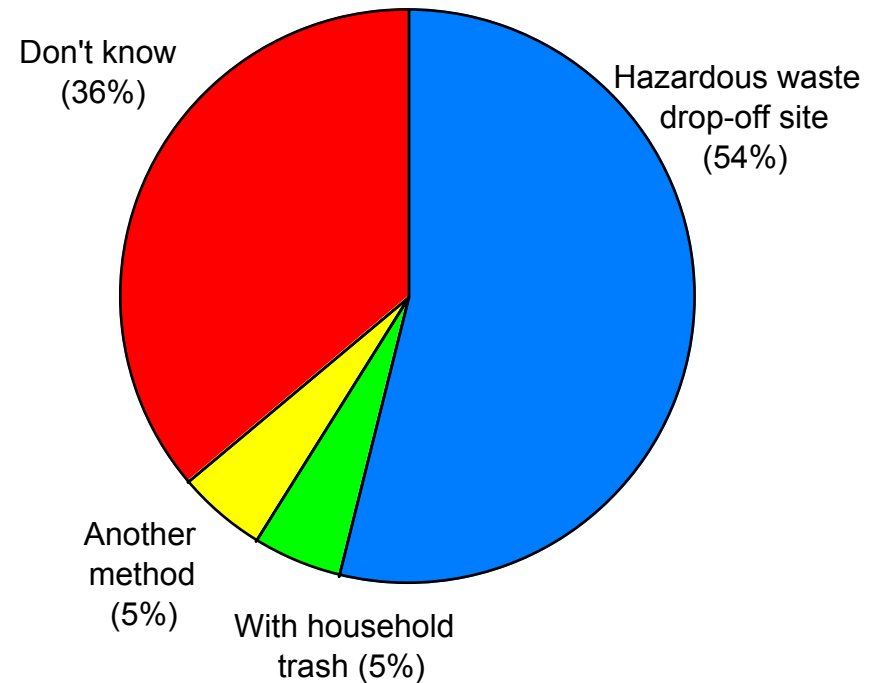
*Asked of 46% who have disposed of chemicals

Figure 12. How Consumers Dispose of Chemicals and Awareness of Proper Disposal Method

How did you dispose of household chemicals?*



As far as you know, what is the proper way to dispose of household chemicals?



*Asked of 46% of residents that have disposed of household chemicals